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<110> Heck, Gregory R.
Brown, Sherri M.
Liu, Jingdong

<120> Nucleic Acid Molecules and Other Molecules Associated
with the Gibberellin Pathway

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aagtgaaatc aaggagtgcc tagaatacgt acacaggtag ttgggtgacc aaaggcttgc 180
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ctggactgag gacgggatct gctgggagag gaactccgac gtgaaggagg tggacgacac 180
ggccatggct ttccgcctgc tacggctgca cggatacagc gtctcgccag atgtgttcaa 240
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ggggatgtac a 311

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cgtcagcaag tttagcgggg gagtgccctt tacctaccct gtggatctgt tcgagcactt 180
atgggtagtg gacaggatag agcggctggg catagggagg cacttcacag gtgaaatcaa 240
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agcatcgtga aaagctgtta ctacgtgct 210

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gagccatccc tgctagctat ctatgcaagg agagacgcaa agctcgcaag aatccctaaa 180
gaattactgc acgcttcacc gacaactctg cttctgagca tagagggaat gccgggctta 240
gactgg 246

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tttccagaga caatgcaagc tcgagtggca tggcctcaga aaatggggcca gcaggagaaa 180
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 tggatatagaa ccacaatata tggttcatga taggcaaaca tacttacttt tagttcaggt 180
 tattgagatt tgtgctggac gaattggtga ggctgtgtca atgataaaca acaaggataa 240
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 cctccaagca tacggcgtga cgtctaacag cacgctgcga tcctacttct tagccgcagc 240
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 cg 302

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 tttttctgct ttacggggca gaccacacaa gcagtgcagc gaatgtttta tctgtatagg 240
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 aaatttttga aggagaagag agcagcaaatt gagcttgtaa ataaat 346

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 gcgccgtcta cgacacgtgc aagcatctgg tgggcaaggc cgcggcgggtg cagaaccgcg 180
 gggatcatgga ccacatcgcc gacctttggg tggacgtcgt gagggccatg atgcccagag 240
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 agcgagtctg gcagcagctc gtcagtaccg gctgtgtatc cacggaaggc gcacagccag 240
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 tggaccagct acaatttctg cggcaaaggc tggcatattg ctatctcgct gctgctacca 180
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 ttggagagga ctgcatttca tcgggaggaa tttctctggt gctatggacc agcagttcac 180
 ttctcctata ggtttcaaca tcacctttcc tggtttgctt aacctcggca ttgatatggg 240
 gttagaatta cctgtagaca aactgatgt 269

<210> 17
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 <212> DNA
 <213> Zea mays

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 ttatcccaga aggattogga aatatgctgg actgggatca agttatgaag tttcagagga 180
 agactcgatc attgttcagc actccttcca caactgctgt tgcattaatc cacaaatata 240
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 tctatgtcca tagaagccgc taaaaaggca atgcagaagt ccatagacgt gtctaggaga 180
 gacttgctaa gattggttct caggaaagaa agtgctgttc ctaggccatg caaggagctc 240
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 cagagacttc aattcctctc aacttactta ccagcaagaa cttcaacatc ttgaaagttg 180
 ggtgaaagaa tgcaggttgg accaactacc atttgtgcga caaaatttgg catacttctt 240
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 aaaaaatggt ggcgtcataa ctattgttga tgacttcttt gatgttggag gatcaaaaga 360
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 ttactc 426

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<211> 441

<212> DNA

<213> Zea mays

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tgtcacacaa tttggcagtg cagtaccaac agtggtccca caaaatattc actatcagct 360
ttcaatggtg gacacgctcg aaagtgttgg aatatcacgg catttttctg tggagaaaaa 420
ggctgtcctg gacatgatat a 441

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<212> DNA
<213> Zea mays

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tacctgatac cgaagggctg gaacgttcag ctgtggtaca gaagtgtgca catggatcct 120
gaagtttata gtactccaaa gagtttaacc catcaagatg ggaggggttat acaccgagag 180
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agetggagat ctccgtct 258

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<211> 263
<212> DNA
<213> Zea mays

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gcacatgagt cctgaagttt atcgtgactc caaagagttt aacccatcaa gatgggaggg 120
ttatacaccg agagccggca cattccttcc ttctggactt ggtaccagat tctgccctgg 180
gaacgatctt gcaaagctgg agatctccgt ctctctccac catttctcc ttggttacia 240
gctcacgagg acaaatacta act 263

<210> 26
<211> 358
<212> DNA
<213> Zea mays

<400> 26
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accttccggg aggccgtgga ggacgtggag taccaagggt acctgatccc caagggctgg 120

<400> 29

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tgctggtgcc cttttagtcc taagatctat cctcaagaat gtaaattggt ggctctatga 120
atccaaattg ggtgtgaagc agtactcttt gccaccaggt gacatgggat ggccttcat 180
tggcaacatg tggtcctttc tcagtgcctt caagtccaag gaccctga 228

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<213> Glycine max

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gatgatgtgt tccatgtgga tgtgggttgt ccttgtggcc attgctggtg cccttttagt 120
cctaagatct atcctcaaga atgtaaattg gtggctctat gaatccaaat tgggtgtgaa 180
gcagtactct ttgccaccag gtgacatggg atggcccttc attggcaaca tgtggtcctt 240
tctcagtgtt ttcaagtcca aggac 265

<210> 31

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<212> DNA

<213> Glycine max

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gctggtgccc ttttagtcct aagatctatc ctcaagaatg taaattggtg gctctatgaa 120
tccaaattgg gtgtgaagca gtactctttg ccaccaggtg acatgggatg gcccttcatt 180
ggcaacatgt ggtcctttct cagtgccttc aagtccaagg accctattcc ttcactcct 240
cctttgtctc cagatttgga agaact 266

<210> 32

<211> 243

<212> DNA

<213> Glycine max

<400> 32

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aaaaatctag tggccatatt tcaatctatt gtggatgaga gaagaaactt aaggaaggga 120

<223> unsure at all n locations

<400> 35

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 cctaagatct atcctcaaga atgtaaattg gtggctctat gaatccaaat tgggtgtgaa 180
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 tctcagtgtc ttcaagtcca aggaccctga ttccttcata tctcctttg tctccagatt 300
 tggaagaact ggaatgtaca agaccatgat gtttggaat ccaagtataa ttgtgacaac 360
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<211> 389

<212> DNA

<213> Glycine max

<400> 36

gttagagcca tgtgtattaa tattcccgga tttgcatacc acaaagcatt caaggcaagg 60
 aaaaatctag tggccatatt tcaatctatt gtggacgaga gaagaaactt aaggaagggc 120
 tatctgcctg gaaaagccaa agatatgatg gatgctctga tagatcttga agatgatgaa 180
 agaaagttga gtgacgagga catcattgac atcatgttga tgtacttgaa tgcggggccac 240
 gagtcttcag gacatattac catgtgggca accttcttcc tgcaaaagca ccagaatat 300
 ctccaaaagg ctaaggcaga acaagaagaa ataataagga gaaggccttc aacacagaaa 360
 ggggttgacac ttaaggaagt tcgggagat 389

<210> 37

<211> 349

<212> DNA

<213> Zea mays

<400> 37

ccaagaccgt ggcggtggcg ctggcgggga gcctgctggg ccacgacgag gcggcggcgt 60
 tcccggcggg gtgcggcgag accaactgct acctgcggct gaatcggtac ccggcgtgcc 120
 cgttcgcggc gaacaccttc gggtggtgc ccacacgga cagcgacttc ctgacggtgc 180
 tgtcccagga ccaggtcggg ggctgcagc tcatgacgga cgccggctgg gtggccgtca 240
 agccccgccc cgacgcgctc atcgtcaaca tcggcgatct gtttcaggcc tggagcaaca 300

ctcctgtccg ccatggtggc ggcggcctcc cgcgatccac gacacgaagg cgtccatggt 120
 gcccgcgctc gaccggtagt gcttctgctt gaactcgagg aactcgcgcc acgtgaagtc 180
 cgggaacgcg cgcggggcggc ccgcctgctt gttctcctgg aggagcgcgc ccggcgggcg 240
 gacgacgcgg tccagcggcg ggttgaggaa gaaggcgagc gaccggcggg cgcgctcgcc 300
 gctcaccacg gcgcggtgca ngcagctggt gtgacgccg tcggtgagcg cggcgaaggt 360
 gtcgccgatg ttgaccacga acgcggtccc gcggggccgn accgggcgcc acggtccgcc 420
 gcc 423

<210> 41
 <211> 284
 <212> DNA
 <213> Glycine max
 <220>
 <221> unsure
 <222> (19)...(20),(22)...(23),(30)...(31),(33),(40),(47),(56),
 (59),(61),(67),(70),(84),(105),(156),(159),(238),(283)
 <223> unsure at all n locations
 <400> 41

tagtaacaca agagtatann cnngagatgn ngnagctgtn ctaaaanatt tcaganctna 60
 nagcttngan cttaggcctt gaancaaaga ggtttgaaga atttntcat cacagaccaa 120
 actagcttta ttgcactcaa ccactatcct ccatgncnc atcctgacct tggttttgga 180
 cgtcggtcga cacaaggacc ctggtgcctt aaccattctt gcacaggatg aggttggnng 240
 acttgaagtg agacgtaaag cagatcaaga gtggataaga gtnc 284

<210> 42
 <211> 336
 <212> DNA
 <213> Glycine max
 <220>
 <221> unsure
 <222> (113)
 <223> unsure at all n locations
 <400> 42

ctttcatcct ctctctcgaa cttatttata tctctctggt tctctgtttt gctctgcttc 60
 tcaaaacata accttttatt attatagtat ttactatta taaactaatt ttncattgct 120
 aatgcaatgg ccatagagtg cataacaaat atacaatcaa tgtctcaacc acaaaagcac 180

caccaagagc acaaagaaga tgaagcacca ttggtttttg atgcctcact tctcaggcac 240
 caactcaacc taccaaaaaca gttcatttgg cctgatgagg aaaagccatg catgaatgtg 300
 cctgagcttg gtgtccctct cattgacttg gggggg 336

<210> 43
 <211> 277
 <212> DNA
 <213> Glycine max

<400> 43
 gtcgagggcc tccaagtctt tgttgatgga agatgggtact ctgtcgctcc taaagaagat 60
 gctttcgttg tcaatatttg cgacacattt atggctctat cgaatgggat gttcaagagt 120
 tgcttgcata gagcagttgt aaacacaaaa ttgtgagaaa atcacttgct ttcttctat 180
 gtccaaatag agacaaagtg gtcacccctc caaaagatct aatcagctac gaaaattcaa 240
 gaacataccc agatttcaca tggccaagcc ttcttga 277

<210> 44
 <211> 242
 <212> DNA
 <213> Glycine max

<400> 44
 acttgaagtg ctttctctca gcagatccac aagctttgtc aacagtttgt gctgaattga 60
 gtgaggcatg caagaagcat ggcttcttcc ttgttgctcaa ccatggagt gatagcaagc 120
 tcatagctca agctcataag ctcatagatg atttcttctg catgcaactc tcacagaagc 180
 agaaggctca gagaaagatt ggagaacatt gtggctatgc taatagcttc attggaagat 240
 tc 242

<210> 45
 <211> 257
 <212> DNA
 <213> Glycine max

<400> 45
 ggatggacca acaccaaaagt ctgagatcaa gcottgaatc ttttgcaaca agaatgttcc 60
 cccttgctga aagcgtggca gaagtactag cctacaaatt gaatacgaac tccaactatt 120
 tccgtgaaaa ttgcttgcca aagagttcgt acattcgact gaatagatat cctccatgcc 180

ctatatcgtc aaaggtgcat ggctgttgc ctcacagtga tacaagtttt cttaccatcg 240
tacatcagga ccaggtt 257

<210> 46
<211> 243
<212> DNA
<213> Glycine max

<400> 46

gtaatttggg agggtttacc aggactattg tgatgccatg agcaatcttt ctttggggat 60
aatggaactt ttgggaatga gtcttgaggat tggtaaagca tgtttttagag agtctttgaa 120
gagaataact caataatgag gctcaattac taccctcctt gtcaaaagcc tgacctcact 180
ttgggcactg gacctcactg tgacccaaca tctttgacca ttcttcacca agaccaagtg 240
gga 243

<210> 47
<211> 229
<212> DNA
<213> Glycine max

<400> 47

tgtggagcac aagggttgtg caaataacaa aatggaaaga tactccatag catatttcct 60
atgtccttct tacagtactg tcataaacgg ctgcaaagga ccttctgttt ataggaagtt 120
cacgtttgga gaatacagac accaaattca agaagatgct aagaaaatag gacacaaaat 180
tggaactatcg aagttttctac ttttaagatac atgcgcacat tgggataaa 229

<210> 48
<211> 263
<212> DNA
<213> Glycine max

<400> 48

atagagttta taacaaatat acaatcgatg tctcaaccac aaaagcacca ccaatagcac 60
attgaagatg aagcaccatt ggtttttgat gcctcacttc tcaggcacca actcaaccta 120
ccaaaacagt tcattttggcc tgatgaggaa aagccatgca tgaatgtgcc tgagcttggt 180
gtccctctca ttgacttggg ggggttcttc tctggtgacc ctggttgcaac aatggaggct 240
gcaaggatag ttggtgaggc atg 263

<210> 49
 <211> 255
 <212> DNA
 <213> Glycine max

<400> 49

tacggctgcg agaagacgac agaggggacc ttcatggtat gttactatgt taattattct 60
 tgactttcat tcatttggtt ttcttaccaa accaaaccaa acagtgagct tgaatttgga 120
 ttcataatga tgattccagt gttgatgtaa aacatgtttt atttttttcg tattgattag 180
 gctctttcga atgggagata caagagttgc ttgcataggg cagtggtgaa tagccagaca 240
 acaagaaaat ctctt 255

<210> 50
 <211> 235
 <212> DNA
 <213> Glycine max

<400> 50

gctggttgag attatagctc tgagcttagg ccttgaggca aagaggtttg aagagttttt 60
 catcaaagat caaactagct ttattcgact caaccactat cctccatgcc cttcccctca 120
 tctagctctt ggtggttggtc gacacaagga cattggagcc ttaaccattc ttgcacaaga 180
 tgatggttga ggacttgaag tcaaacgcaa agcagatcaa gagggtgataa gagg 235

<210> 51
 <211> 246
 <212> DNA
 <213> Glycine max

<400> 51

gctggttgag attatagctc tgagcttagg ccttgaggca aagaggtttg aagagttttt 60
 catcaaagat caaactagct ttattcgact caaccactat cctccatgcc cttcccctca 120
 tctagctctt ggtggttggtc gacacaagga cattggagcc ttaaccattc ttgcacaaga 180
 tgatggttga ggacttgaag tcaaacgcaa agcagatcaa gatggataag agtgaaacct 240
 acacca 246

<210> 52
 <211> 272
 <212> DNA
 <213> Glycine max

<210> 59
 <211> 262
 <212> DNA
 <213> Glycine max

<400> 59

ggtgcgaatc acaacactgc acaaggatta gggtttacat ttgggaggta gcacgagagc 60
 agtaggtgaa gcgtgcattc tcaacagttg atctctctcc tttcctgaga gaggatgacg 120
 atggataacc gagagccata gatgcaatca cccaagtctg gtctgcatat ggcagcttcc 180
 atattgtgaa ccatggagta tcccttgatt tgggtaaaga ggccatgcag ctatctaaga 240
 ccttgtttag attactcgga tg 262

<210> 60
 <211> 273
 <212> DNA
 <213> Glycine max

<400> 60

gtgcgaacca caacactgca caaagattag ggtttacatt tgggaggaag caagaaagag 60
 atgggtgagg cgtgcattcc aacagttgat ctctctcctt tcctgagaga ggatgaagat 120
 ggaaaaaaga gagccataga agcaatcacc caagcctggt ctgaatatgg cttcttccaa 180
 attgtgaacc atggagtttc cctgatttgg ttaaagaggc catgcagcaa tctaagacct 240
 tttttgatta ctctgatgaa gaaaagagca aga 273

<210> 61
 <211> 276
 <212> DNA
 <213> Glycine max

<220>
 <221> unsure
 <222> (2)
 <223> unsure at all n locations

<400> 61

gntcacactg attacggttt attgacatta cttaatcaag atgacgatgt aaacgcactt 60
 caggtgagaa acctgtctgg tgaatggata acagcacctc cagttcctgg gacatttgta 120
 tgcaacattg gtgacatgct aaagatttac tccaatgggt tgtacgagtc cactttgcat 180
 cgggtgataa acaacaactc aaaatataga gtcagtgtag tatactttta tgagacaaac 240

<210> 70
 <211> 267
 <212> DNA
 <213> Glycine max

<400> 70

caagacttca actcacttca agaactccct gactcttacg cttggacaca acctgatgat 60
 gatgatcacc gtctcacaaa ttacccttcc aacaataaga ctaagaccgt tgtccccatc 120
 atcgatttga acgacccaaa tgctccaaac ctcataggcc atgcatgcaa aacatgggggt 180
 gtgttccaag tgggtgaacca tggcatcccc acgagcctct tcagtgacat tcagaggggt 240
 agtcttgctc tattctccct tcctott 267

<210> 71
 <211> 253
 <212> DNA
 <213> Glycine max

<400> 71

ctcgttcccc tgacggtgct gatggctatg gccttgctcg catctcttcc ttotttccca 60
 aactcatgtg gtctgaggga ttcacaattg ttggatcccc tcttgagcat tttcgtcaac 120
 tctggcccca agattaccac aaatactgtg atcccgtaa gcgctatgat gaagccatga 180
 aaaagctagt gggaaagctg atgtggctga tgttgattc tctgggtatt acaaaggaag 240
 acctgaaatg ggc 253

<210> 72
 <211> 250
 <212> DNA
 <213> Glycine max

<400> 72

aatttccatg cggtagctatg ttttctttgc aagtactagc acaaacagct agctactatt 60
 tttgaacttg tcataattag tctctaattc taattagcca tacattgaac acaccagcac 120
 accttaaagc taagtggat ttgttccaca caggtacact attccttcac tctcagaagc 180
 ctaccgagcc caccctgtgc acgttcaaca caagcacct gacttaaact ccctacaaga 240
 actccccgag 250

<210> 73
 <211> 256

<212> DNA
 <213> Glycine max
 <220>
 <221> unsure
 <222> (152)
 <223> unsure at all n locations
 <400> 73
 aagccatgaa aaagctagtg ggaaagctga tgtggctgat gttggattct ctgggtatta 60
 caaaggaaga cctgaaatgg gccgggtcca aaggccaatt caaaaagaca tgcgcagcct 120
 tgcaattgaa ctcttaccgc acttgctcgg anccggatcg ggccatgggt ctggccgccc 180
 acaccgactc cacccttctc acaatccttt accaaaacaa cataagcggg ttgcaggttc 240
 accgaaaagg cggcgg 256

<210> 74
 <211> 253
 <212> DNA
 <213> Glycine max
 <220>
 <221> unsure
 <222> (128), (130), (212), (216), (238), (240), (244)... (245),
 (248)... (249)
 <223> unsure at all n locations
 <400> 74
 gcgatatgat gaagccatga aaaagctagt gggaaagctg atgtggctga tggttgattc 60
 tctgggtatt acaaaggaag acctgaaatg ggccgggtcc aaaggccaat tcaaaaagac 120
 atgcgcancn tgcaattgaa ctcttaccgc acttgctcgg atccggatcg ggccatgggt 180
 ctggccgccc acaccgaact ccaccotctc anaatnttta ccaaaacaaa atggggngn 240
 tgcnngttna cgg 253

<210> 75
 <211> 245
 <212> DNA
 <213> Zea mays
 <400> 75
 aagaccatgg cattccgcgg aggaaggagg gcctgtgcgg gaagcatcca ggcagtgaac 60
 atcgcgtgca cagccatcgc gaggtccgtg caagagtttg cgtggacgct caaggaaggc 120
 gacgaggaca aggacgacac catccagctt acaaccaaca ggctttaccc gttgcatgtg 180

tacctcacac ctagaggaag gaaatgagca tcacatttat ttggtctctg gtctgtgagc 240
atatg 245

<210> 76
<211> 149
<212> DNA
<213> Zea mays

<400> 76

cggctcgagc aggaatacct ttatcaagaa atccaaaaag tctgoggcaa taagacagtt 60
accgaggatc acctgccaga gttaccgtac ttgaacgcgg tgttccatga gaccatgagg 120
cggcattctc cagttccatt agtgctcc 149

<210> 77
<211> 263
<212> DNA
<213> Zea mays

<400> 77

aaaggttata tcaaaggagg aaatctacaa ggccactgtg gttgacatga tgatgtgtgc 60
aattgaggtc gactggaggg atttcttccc gtacctcagc tggattccaa ataggacott 120
cgaaacaaga gtactgacta ccgaagcgag gagaactacc gtgatgcaag cottgatcaa 180
gcagcaaaag gaaagaattg cacgtgggga gactaggata tctacctgg acttcctgct 240
ggcagagaat acactgactg atg 263

<210> 78
<211> 288
<212> DNA
<213> Zea mays

<400> 78

aggcattgtc agcgtcacc cgtgacaaaa ctatgggtgc tacaagtgc tatggtgact 60
tccacaaaat gattaagcgt tatatcatga cattcatggt gggtacttct ggccagaaac 120
aatttaggga cacaagaaac atgatgggtg acaacatggt gaacactttc catacattgt 180
tgatggatga tccaaattct cotctgaact tccgggaagt tttcaagaat gaattatttc 240
gcttatccct gggtcaggct ttaggcgagg atgtgagttc aatctatg 288

<210> 79

<400> 82

ttgagatccg aggggagtgt tccggtgagg gaatgcgaac gaggcttatg ctggtcacgt 60
 ggctggatga atgagcagaa gaacagaatg gcttcaggaa aggaagtaaa ttgttatattt 120
 gactacctgg tatcggaagc taaagaactg actgaagatc aaatttccat gctaactctgg 180
 gagaccatta ttgagacatc tgatactaca ttagttacaa ctgaatgggc tatgtatgaa 240
 cttgc 245

<210> 83

<211> 230

<212> DNA

<213> Glycine max

<400> 83

cacagattcg agatgcatgc tatggagtgc tccacctttt cagttactgt gccgcagct 60
 gctttttcta tctcttctt cttctgcga catgcgggag cggagcagg atcactcccc 120
 ccagtaccag ctgttccagg attaccagtg attgggaatc tgctccaatt gaaggagaag 180
 aaaccttaca agaccttcac ccagatggct cacaacatg ggcccatcta 230

<210> 84

<211> 245

<212> DNA

<213> Glycine max

<220>

<221> unsure

<222> (236)

<223> unsure at all n locations

<400> 84

acagattcga gatgcatgct atggagtcc tcacctttc agttactgtg gccgcagctg 60
 ctttttctat cctcttctt ttctgcgac atgcgggagc cggagcagga tcaactcccc 120
 cagtaccagc tgttccagga ttaccagtga ttgggaatct gctccaattg aaggagaaga 180
 aaccttaca gacttcacc agatggctca caaacatggg cccatctatt ccatcngaac 240
 cgggtg 245